

Datasheet

Copper Ethernet SFPs

SFP-GC-R and SFP-GA-R



Highlights

- SFP-GC-R - 1000Base-T for Layer 1 devices (no MAC)
- SFP-GA-R - 1000Base-T for Layer 2 and above devices (with MAC)
- MDI/MDI-X automatic detection
- Plug-and-play functionality
- LOS support (SFP-GC-R)
- Hot-swap support
- Transmitter always on (no LIN support)
- MSA compliance
- Complete MRV SFP compatibility
- 1000 Base-T operation in host system with SGMII interface

Overview

MRV offers two models of Ethernet SFPs that support Gigabit Ethernet functionality for copper media application.

The SFP-GC-R model supports Gigabit Ethernet with a 1000Base-T interface. It is designed for Layer 1 network devices that do not incorporate an Ethernet MAC. The SFP-GA-R is designed for use in Layer 2 and higher protocol devices such as switches and routers that do incorporate an Ethernet MAC. It supports Gigabit Ethernet with an auto-negotiating 1000Base-T interface. SFP-GC-R and SFP-GA-R models each support MDI/MDI-X auto-detection and jumbo packet sizes 9,600+ bytes.

Installed into MRV products with an available SFP port, the SFP-GC-R plug-ins provide a simple and cost-effective way to merge copper and fiber network segments.

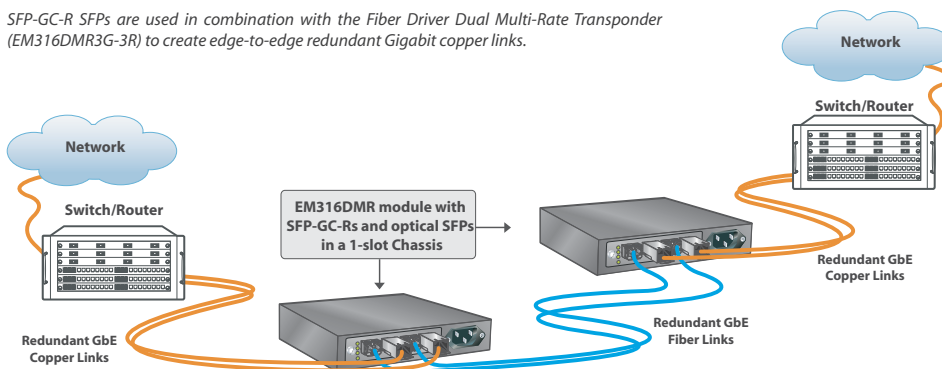
The SFP-GA-R gives network administrators greater flexibility in configuring their SFP-enabled switches and routers, allowing them to use less expensive copper cabling and interfaces for links of 100 meters or less.

The SFP-GC-R and SFP-GA-R do not convert between edge devices of different speeds or duplex mode. Connected edge devices must operate at the same speed and duplex mode to communicate. An edge device that supports auto-negotiation may require specific interface settings for fixed Gigabit Ethernet speed and duplex mode operation.

The SFP-GC-R uses the SFP's RX_LOS pin for link indication. The SFP-GA-R is compatible with 1000Base-X autonegotiation, but does not use the RX_LOS pin for link indication because RX_LOS is internally grounded. The SFP-GA-R and SFP-GC-R SFPs support the 2-wire serial communication protocol outlined in the SFP MSA to communicate the link indication.

Application A: Gigabit Ethernet Copper-to-Fiber Conversion with Redundancy

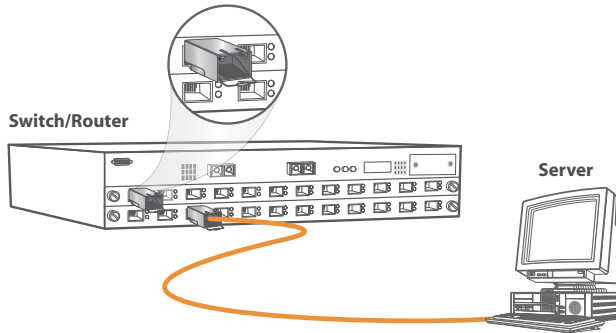
SFP-GC-R SFPs are used in combination with the Fiber Driver Dual Multi-Rate Transponder (EM316DMR3G-3R) to create edge-to-edge redundant Gigabit copper links.



Datasheet

Application B: SFP-Enabled GbE Switch/Router

The SFP-GA-R is used in an SFP-enabled GbE switch or router to link to a server configured with a copper GbE NIC.



Physical Specifications

Operating Temperature Range	0° C to 70°C (32°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Relative Humidity	85% maximum, non-condensing
Power	1.5 W
Regulatory Compliance	FCC Part 15 (Class A); IC (Class A); EMC Directive: Emission (Class A) and Immunity; RoHS Directive; China RoHS; WEEE Directive: Wheelie Bin Mark

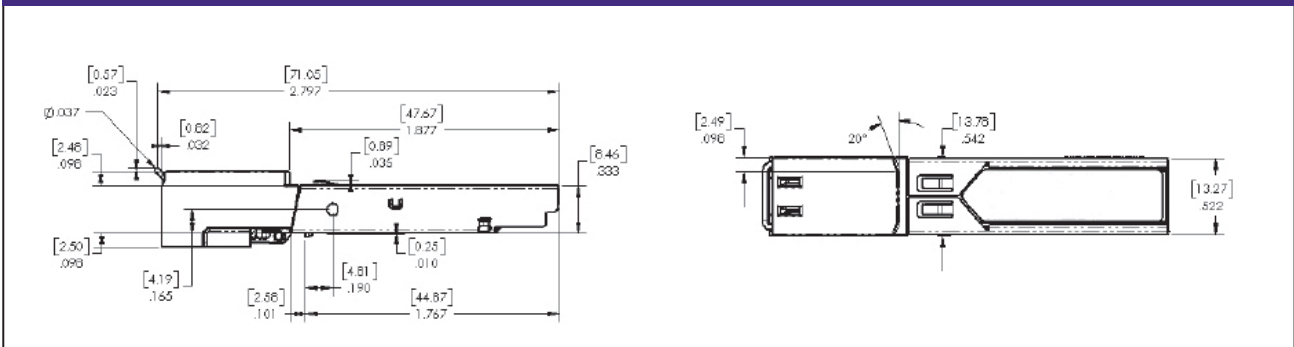
Comparison Table	SFP-GC-R	SFP-GA-R
RJ-45 connector	Yes	Yes
Cable type	CAT-5	CAT-5
Maximum cable length (m)	100	100
Ethernet Standard	1000 Base-T	1000 Base-T
Supports speed auto-negotiation	N/A	Yes
Supports duplex auto-negotiation	N/A	Yes
Supports auto MDI/MDI-X detect	Yes	Yes
Match translates between edge devices	No. Both edge devices must operate in the same duplex mode.	No. Both edge devices must operate in the same duplex mode.
Used with Layer 0/1 devices (e.g. repeaters converters and WDM transponders)	Yes	No
Used with Layer 2 devices, e.g. switches and routers	No	Yes
Link Indicator on Rx_Los Pin	Yes	No
1000Base-X auto-negotiation enabled by default	No	Yes
Packet Size (bytes)	9600 +	9600 +
I²C Bus Clock Rate	0 - 100,000 Hz	0 - 100,000 Hz

Datasheet

Notes for SFP-GC-R and SFP-GA-R:

1. By default SFP-GC-R and SFP-GA-R are full duplex devices in preferred master mode.
2. Automatic crossover (MDI/MDIX) detection is enabled. External crossover cable is not required.
3. With a SERDES that does not support SGMII, modules will operate at 1000Base-T only.

Outline Drawing



Ordering Information

Model	Function	Voltage (V)	Protocol	Max. Data Rate (Mbps)	Connectors	Distance Range (m)
SFP-GC-R	SFP, 1000Base-T for Layer 0/1 devices.	3.3	Gigabit Ethernet	1250	RJ-45	0-100
SFP-GA-R	SFP, 1000Base-T for Layer 2 and higher devices.	3.3	Gigabit Ethernet	1250	RJ-45	0-100

MRV has more than 50 offices throughout the world. Addresses, phone numbers and fax numbers are listed at www.mrv.com. Please e-mail us at info@mrv.com or call us for assistance.

MRV Los Angeles
20415 Nordhoff Street
Chatsworth, CA 91311
800-338-5316
818-773-0900

MRV Boston
300 Apollo Drive
Chelmsford, MA 01824
800-338-5316
978-674-6800

MRV International
Business Park Moerfelden
Waldeckerstrasse 13
64546 Moerfelden-Walldorf
Germany
Tel. (49) 6105/2070
Fax (49) 6105/207-100

All statements, technical information, and recommendations related to the products herein are based upon information believed to be reliable or accurate. However, the accuracy or completeness thereof is not guaranteed, and no responsibility is assumed for any inaccuracies. Please contact MRV Communications for more information. MRV Communications and the MRV Communications logo are trademarks of MRV Communications, Inc. Other trademarks are the property of their respective holders.